

L'exemplaire filmé fut reproduit grâce à la générosité de:

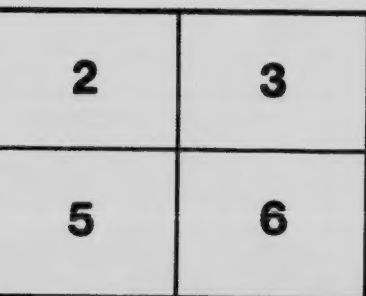
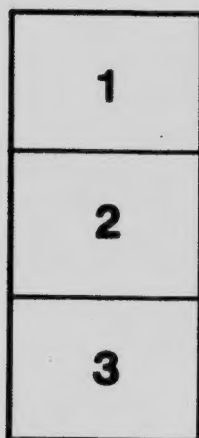
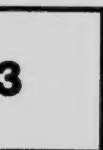
Bibliothèque  
Agriculture Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole  $\rightarrow$  signifie "A SUIVRE", le symbole  $\nabla$  signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.



MAR 22 1970

Government of the Province of Saskatchewan  
DEPARTMENT OF AGRICULTURE

# ALFALFA IN SASKATCHEWAN

BY JOHN BRACKEN

*Professor of Field Husbandry, University of Saskatchewan.*

A hardy drought resistant leguminous hay crop has long been desired by the farmers in the older parts of Saskatchewan. Such a crop is a necessity from the point of view of soil conservation and very desirable as a supplement to the forage crops now grown. Some varieties of alfalfa when properly managed, combine all the qualities mentioned above. This crop promises to be a very useful one in many portions of Saskatchewan, both as a soil improver and as a forage crop.

## HISTORY OF ALFALFA IN SASKATCHEWAN.

The record of alfalfa in this province is very brief. Previous to 1904 it was almost unknown here. At that time arrangements were made to investigate its possibilities at the Experimental Farm at Indian Head and in the same year the Fairs and Institutes Branch of the Provincial Department of Agriculture distributed seed of Turkestan alfalfa to farmers in all parts of the province through the co-operation of local agricultural societies. Since that time the experiment stations and many private farmers have done a considerable amount of experimental work with it and as a result we know today that there are varieties of alfalfa suited to the climatic and soil conditions found here.

## SUITABILITY TO SOIL AND CLIMATE.

Alfalfa can be grown on practically all normal soils of the province. Alkali and low lying soils, which are subject to flooding are unfavourable to alfalfa, but on the normal loams and clays it finds a satisfactory environment. On the heavy soils it produces a larger yield of forage than on the lighter types; but on the other hand the production of seed is generally greatest on the warmer and earlier soils.

Eastern Saskatchewan is better adapted to the production of alfalfa hay than Western Saskatchewan. It is doubtful whether at the present price of seed, alfalfa can be grown profitably for hay in the drier portions of Western Saskatchewan. In these parts, however, alfalfa seed can be grown very satisfactorily if the crop is sown in rows two and one-half or three feet apart.

## VARIETIES.

During the last five years approximately sixty strains of alfalfa have been tested by the Field Husbandry Department of the University of Saskatchewan. As a result we are able to say with some confidence



that Grimm, some strains of Sand Lucerne and some of Turkestan are, in the order named, among the most suitable for this province. Baltic, Ontario variegated and several strains of Siberian alfalfa are now under test. These promise satisfactory results. There is now no doubt but that with fair treatment the true Grimm alfalfa will withstand the low temperatures of all normal winters here. This variety has given us more satisfactory results than any other during the five years we have been testing the crop at Saskatoon.

#### SEEDING.

Our experience with alfalfa goes to show that it should be seeded in the early part of the rainy season, or between the middle of May and the middle of June. It gives best results when sown on fallow or on ground which has been in hoed crop the previous year. Soil which has been well manured before a hoed crop furnishes probably the best conditions for starting alfalfa. Grass is the crop's worst enemy and we are coming to believe that alfalfa should not be sown on land which has not been freed from the creeping rooted species of native or introduced plants. Thin seeding has given best results on soils free from weeds. Thick stands suffer most in periods of drought and on the average yield less than thinner ones. On weedy land thicker seeding is necessary because of the fact that many plants are smothered out before they are large enough to hold their own against the weeds. Thorough preparation of the soil before seeding to alfalfa is essential to the profitable production of the crop.

Broadcasting the seed without a nurse crop is quite often followed, and, if sown in the rainy season on well prepared soil that is not inclined to blow, it generally gives good results. The most successful farmers are now, however, drilling in the seed. Some use the grass seed attachment on the ordinary grain drill, while others use this drill without the attachment and increase the bulk of the seed with cracked wheat or barley or other material which has been sifted to a uniform size a little larger than alfalfa seed. By drilling the seed the conditions necessary for germination are more easily controlled and less seed is necessary. From eight to twelve pounds of good seed is quite sufficient for an acre. A nurse crop should not be used.

#### ALFALFA—A SOIL IMPROVER.

Alfalfa is a "legume." It has the power when "inoculated" of drawing upon the atmosphere for a part of the nourishment that would otherwise be taken from the soil. "Inoculation" can be effected by taking soil from an old productive alfalfa field and applying it to the field to be sown, or the soil may be mixed with the seed before sowing. The soil so used should not be allowed to dry out. After applying, the field should be harrowed immediately.

Artificial cultures of alfalfa bacteria may be purchased and applied to the seed before sowing. These often give better results than the soil method of inoculation, but sometimes the bacteria in the cultures are killed by unfavourable conditions during transportation. The soil method is the surest but the pure culture method is sometimes the most

effective. Increased yields of from three hundred to one thousand pounds per acre have been secured from the use of both inoculated soil and alfalfa culture.

#### "CLIP BACK" TO CONTROL WEEDS.

When seeded on land which has borne a crop of cereals the previous year many annual weeds come among the alfalfa plants. These can be controlled only by clipping back the crop. Clipping is not desirable except where it is necessary to control weeds. No crop is expected the year the seed is sown, but on the heavier soils in the more humid parts of the province and particularly in moist seasons one crop may be taken. It has been demonstrated conclusively time and time again that a growth of six to ten inches should be left on the field in the fall in order to protect the plant roots by holding snow in the winter. Invariably this practice results in increased yields the following year and in longer life to the field.

#### HARVESTING.

In harvesting alfalfa, three things should be remembered: First—That its feeding value is greatest if cut just after blooming has commenced. Second—That the leaves, which fall off with the slightest provocation when dry, contain by far the most valuable part of the crop, being equal in feeding value to wheat bran; and third—That rains not only discolour the hay and make it less palatable and less digestible, but also remove in solution much of the nutritious portion of the fodder.

The crop should not be cut while wet nor when dew lies upon it. When 10 per cent. or thereabouts of the plants are in bloom cutting should commence. It has been observed that if cut later than this the yield is less than it would otherwise be, due to the clipping back of the new sprouts which ordinarily appear at this time. Since quick drying in the sun makes the leaves brittle and causes them to break off easily, it has been found advisable to rake shortly after cutting and cure it in the cock. If left in the windrow, the outer layers become dry and brittle, causing great loss of leaves and deterioration in quality. This is better than leaving it in the swath, but not so good as curing in the cock. The latter takes more time and labour than when cured in the swath or windrow, but always gives a much superior quality of hay. It is often advisable to turn the cocks over a few hours before stacking or drawing to the barn in order to dry out the lower layer next the ground. The practice of curing in cock may have some disadvantages in exposed locations in windy weather, but when the alfalfa is raked before it becomes too dry it will be found to settle down well and, except in the heaviest winds give very little trouble.

#### SURFACE CULTIVATE THE CROP IN SPRING.

In semi-arid regions the yield of a perennial forage crop is measured by the amount of precipitation conserved in the soil. The practice of disking, "renovating" or harrowing alfalfa in early spring when for three or four weeks after the snow goes the field is left practically bare and lifeless is to be recommended. It has given us increased yields at the University and on those plots where cultivation was given the

crop is in better condition now than where no cultivation was given. The harrows can do no damage after the first year, and the other implements named if used with care, will do but little harm to the plants and much good to the soil.

#### PRESENT STATUS OF ALFALFA PRODUCTION.

The present status of alfalfa production in Saskatchewan, while very promising, is not quite satisfactory. It has been amply demonstrated that certain varieties are hardy and are quite well suited to the conditions found here. In view of the knowledge of this fact, and the relatively small supply of seed of these varieties, the price is becoming almost prohibitive. In the southern and western part of the province where the precipitation is lighter the yield is often small particularly in a dry year.

To make the situation more difficult, practically no seed has been produced in a commercial way in the province. It is clearly the business of all agricultural interests to promote in every legitimate way the production of alfalfa seed. The south-western corner of the province seems particularly well adapted for this purpose. The farmers need the seed, and south-western Saskatchewan can produce it.

A considerable number of farmers are now sowing alfalfa in drills two, two and a half or three feet apart for the production of seed. The yield of seed is greater from fields sown in wide rows than from those sown in the ordinary way. When sown in rows two and a half feet apart, three or four pounds is ample for an acre. Yields of seed ranging from fifty to one hundred pounds have been secured in this province from crops sown in the ordinary way, and as much as three hundred pounds per acre has been harvested in south-eastern Alberta, where the crop was sown in rows two and a half feet apart.

It may be remarked incidentally that at the University larger yields of forage have been secured from seeding alfalfa in rows eighteen inches apart at six pounds per acre than by seeding it at any closer distance with more seed. In the dry year of 1914, rows 24 inches apart sown at  $4\frac{1}{2}$  pounds per acre yielded more than any closer sowing. We do not at this time recommend farmers in the north and north-eastern parts of the province to undertake the production of alfalfa seed, but those in the south-western part can grow seed profitably if they will.

A circular on alfalfa seed production will be forwarded on request to anyone interested, by the College of Agriculture at Saskatoon, or the Department of Agriculture at Regina.



